

## ABSTRACT

Improved extracorporeal blood processing methods and apparatus are disclosed. In one aspect of the invention, an extracorporeal method for the collection of platelets and red blood cells, and if desired plasma, is provided, wherein the collection of platelets and red blood cells may occur in differing time periods utilizing the same blood processing vessel. The flow of blood to the blood processing vessel and return of uncollected blood components may be provided via a single needle, wherein blood is removed and returned to a donor/patient during alternating blood removal and blood return submodes. Prior to red blood cell collection, a set-up phase may be carried out during which a predetermined hematocrit and AC ratio is established.